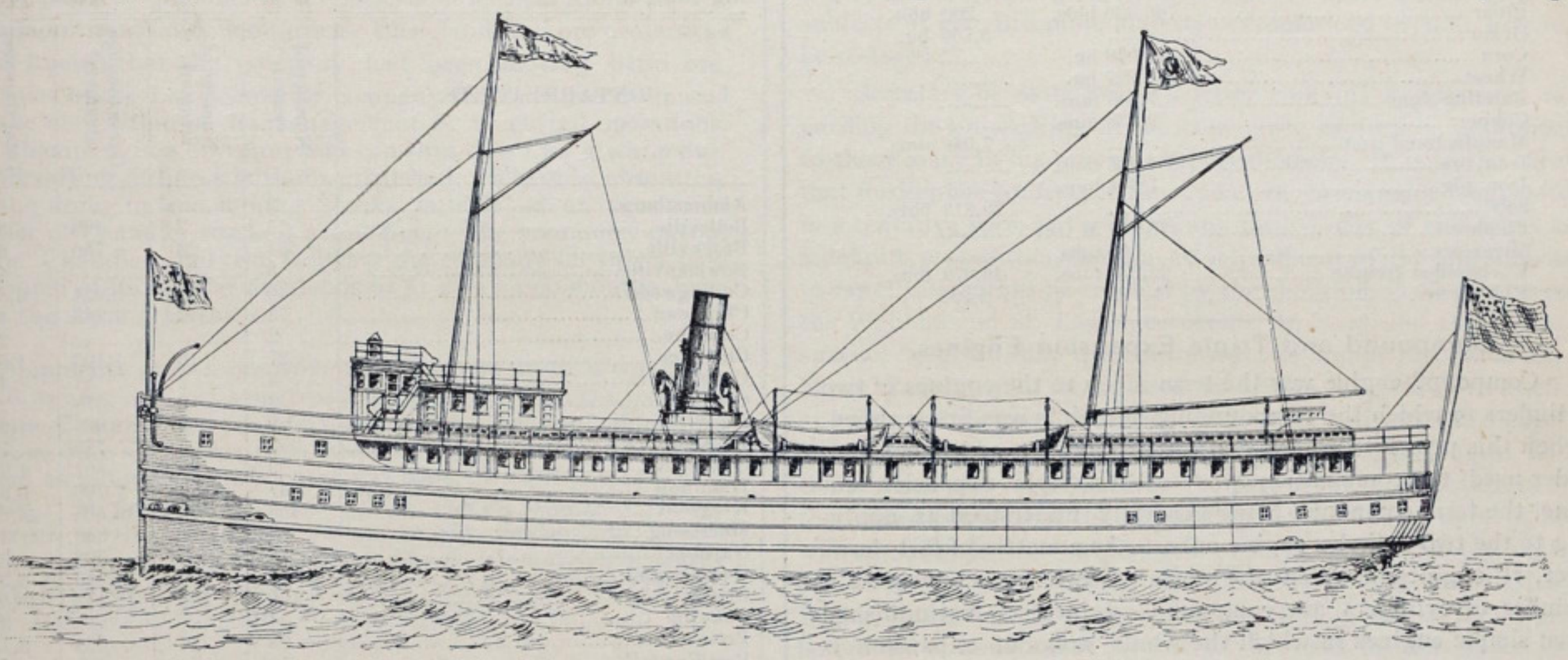
# MARINE REVIEW.

VOL. VI. CLEVELAND, OHIO, THURSDAY, JULY 14, 1892. No. 2.

## Passenger Steamer Chicora.

About Aug. 1 the screw passenger steamer Chicora, shown in the accompanying engraving, will be ready to take her place in the Graham & Morton Line on Lake Michigan, running between Chicago and St. Joseph. Elegant interior work on the cabins is now nearing completion at the works of the Detroit Dry Dock Company, where the boat was launched a short time ago. The Chicora is 217 feet long, 35 feet wide, with a guard of 2½ feet, and 15 feet 3 inches deep. She has triple expansion engines, 21, 33 and 52x42 inches stroke, which will be supplied with steam from two Scotch boilers 12 feet long and 14 feet in diameter, The boilers are to be allowed 165 pounds of steam, and with this power the Chicora is guaranteed to make 17 miles an hour without crowding. It is promised that her interior finish will compare favorably with anything on the lakes. She will have fifty-six staterooms, a large smoking room, a spacious social hall and a commodious grand staircase and gangway between decks, with sleeping capacity for 200 and an excursion license for 1,500 passengers.



SCREW PASSENGER STEAMER CHICORA.

## Lake Freight Matters.

The season of navigation has now advanced far enough to prove the wisdom of the opinion held by vessel owners last winter, that the volume of business would be much greater than during any of the several previous seasons noted for wonderful gains in lake commerce. Already the coal movement to the northwest is more than 200,000 tons ahead of last season. A steady movement of grain has prevailed out of Chicago and Duluth and iron ore shipments are about three times what they were a year ago, notwithstanding a most discouraging condition of the iron trade. Were it not for the depressed iron market, higher freights would rule in all lines and there would be substantial assurance of an active latter half of the season. Uncertainty in iron matters has, however, acted against improved rates. Although iron ore dealers have been getting practically no "wild" tonnage for ten days past, they have persistently fought off an advance, and at this writing rates are $1.10 from Ashland and 95 cents from Marquette with Escanaba nominally 70 cents, shippers being unable to get any boats at the latter figure. Coal freights, especially to Lake Michigan, are active and strong.

## Legislation Proposed by the Commissioner of Navigation.

In another part of this issue will be found a letter from E. C. O'Brien, commissioner of navigation, asking for an opinion as to the practicability of the establishment of a nautical school on the lakes. A previous letter from the commissioner, directed to leading vessel owners, asked for suggestions and recommendations as to the best mode of making investigations of marine casualties. The idea of the commissioner in the inquiry about accidents is to formulate a plan that can be embodied in a legislative enactment that will be acceptable to all persons concerned. In this he has taken a commendable but difficult task. In support of the claim that there is need of such a board Mr. O'Brien says that data kept by the life saving service shows "that from 1886 to 1891 there occurred on the great lakes 147 wrecks, involving a total estimared loss of $2,955,590 and 257 lives." It has been said that the Lake Carriers' Association will recommend for this service a board composed of the United States district attorney, the superintendent of the life saving station, a steamboat inspector nearest the scene of the disaster and say a representative of the Lake Carriers' Association, designated by the president of the association. Such a recommendation may have been made by an individual member of the association or by one of its officers, but not by the organization. If the question of the establishment of such a board comes up for the consideration of the association, its supporters will find a serious objection to contend with in the fact that inquiry into casualties by boards or government officers of any kind will be opposed, on the ground that such inquiry often has an unjust bearing on legal action that follows most accidents.

The plans of the commissioner regarding the establishment of a nautical school on the lakes will meet with support if prepared for presentation to congress. With sailing vessels almost entirely removed from the lakes, there is little to tempt young men into the service. Although it is not expected that any benefit could be derived from the teaching of the science of navigation in such a school, there is no doubt of the advantages that would come from practical training that would readily fit young men for manning lake vessels. In this way also a naval reserve would be established in leading lake cities. Mr. O'Brien's plans deserve support in a careful way.

## Coal Movement to Lake Superior.

As shown by the following table, coal shipments, hard and soft, to Lake Superior on July 1 were 209,507 tons in excess of shipments on the corresponding date in 1891:

| | 1892. | 1891. |
|---|---|---|
| April | 151,495 | 10,919 |
| May | 401,729 | 404,698 |
| June | 462,564 | 390,674 |
| Total | 1,015,788 | 806,281 |

The figures are taken from monthly statements of Sault canal traffic and are, of course, entirely reliable. It is unfortunate that these statements do not separate hard and soft coal, but it will be readily understood that the bulk of the gain over last year is in soft coal, as Buffalo had shipped on July 1 of this year only 759,931 tons of anthracite coal, against 812,290 tons in 1891. A very heavy movement of coal to the head of the lakes will, no doubt, continue through the season, but shippers are fearing some delay from this time on, on account of the inability of docks to care for the present tonnage. Shipments of soft coal to Lake Michigan are not well advanced and vessel owners are looking for improved freight rates in that trade later on.

## St. Mary's Falls Canal Traffic in June.

Freight passing through the St. Mary's Falls canal during the month of June aggregated 1,671,879 net tons, of which 1,152,249 tons was eastbound and 519,630 tons westbound. The traffic was divided as follows:

| | Eastbound. | Westbound. |
|---|---|---|
| Coal | ..... | 462,564 tons. |
| Flour | 746,336 bbls. | 200 bbls. |
| Grain | ..... | 5,750 bu. |
| Corn | 191,040 bu. | ..... |
| Wheat | 3,356,927 bu. | ..... |
| Building stone | 7,153 tons. | ..... |
| Copper | 9,438 tons. | ..... |
| Manufactured iron | ..... | 7,040 tons. |
| Iron, ore | 800,965 tons. | ..... |
| Iron, pig | 1,624 tons. | ..... |
| Salt | ..... | 25,813 bbls. |
| Lumber | 75,738 M feet | ..... |
| Silver ore | 40 tons. | ..... |
| Unclassified freight | 22,238 tons. | 46,079 tons. |
| Passengers | 1,846 | 2,098 |

## Compound and Triple Expansion Engines.

Compound engine was the term given to the engines of two cylinders to which the compounding principle was first applied. When this principle was carried further and an additional cylinder used, the combination was called a triple expansion engine, the term compound being generally understood as applying to the two-cylinder engine only. As a matter of fact, however, all engines in which the steam is used successively in a number of cylinders are compound engines as distinguished from simple engines in which the whole range of expansion is accomplished in one cylinder; and we note with interest the use by European writers of the word tri-compound to designate the combination usually referred to upon this side as a triple expansion engine. This usage would give the word bi-compound to a two-cylinder compound engine, and quadri-compound to an engine in which the expansion is divided into four stages. The prefixes must be understood as referring to the stages into which the expansion is divided, and not to the number of cylinders, tri-compound, or triple expansion, engines being frequently built with four cylinders.—Power, New York.

## Canada's Merchant Marine.

Again there is a decline reported in Canada's merchant marine. The twenty-fourth annual report of the department of marine, just issued, shows that the total number of vessels remaining on the register books of the dominion, on Dec. 31, 1891, including old and new vessels, sailing vessels, steamers and barges, was 7,015, measuring 1,005,475 tons, register tonnage, being an increase of twenty-four vessels and a decrease of 19,499 tons register, as compared with 1890. The number of steamers on the registry books on the same date was 1,433, with a gross tonnage of 221,679 tons. Assuming the average value to be $30 per ton, the value of the registered tonnage of Canada, on Dec. 31 would be $30,164,250.

The number of new vessels built and registered in the dominion during the present year was 312, measuring 52,145 tons, register tonnage. Estimating the value of the new tonnage at $45 per ton, it gives a total value of $2,346,525 for new vessels. The number of tons of new vessels is included in the total register tonnage of 1,005,475, and in the total value of $30,164,250.

Canada owned in 1873, 6,783 vessels of 1,073,718 tons, and as noted on previous occasions the aggregate tonnage of vessels owned in the country has not in any year since that time varied 300,000 tons.

The tonnage of the dominion is divided among the different provinces as follows:

| PROVINCES. | Number of Vessels. | Number of Steamers. | Gross Tonnage Steamers. | Total Tonnage. |
|---|---|---|---|---|
| New Brunswick | 969 | 97 | 8,913 | 193,193 |
| Nova Scotia | 2,778 | 118 | 13,992 | 461,758 |
| Quebec | 1,404 | 267 | 74,132 | 162,330 |
| Ontario | 1,345 | 741 | 92,785 | 138,914 |
| Prince Edward Island | 195 | 17 | 4,555 | 23,316 |
| Manitoba | 78 | 51 | 5,762 | 6,197 |
| British Columbia | 246 | 142 | 21,540 | 19,767 |
| Total | 7,015 | 1,433 | 221,679 | 1,005,475 |

Tonnage registered in the different ports of Ontario and Quebec, where lake vessels are owned, is shown in the following tables:

| ONTARIO PORTS. | Number of vessels. | Number of steamers. | Gross tonnage steamers. | Total tonnage. |
|---|---|---|---|---|
| Amherstburg | 3 | ..... | ..... | 148 |
| Belleville | 14 | 7 | 499 | 862 |
| Brockville | 31 | 28 | 766 | 839 |
| Bowmanville | 3 | ..... | ..... | 425 |
| Collingwood | 46 | 44 | 5,021 | 3,878 |
| Chippewa | 3 | 2 | 263 | 153 |
| Cramahe | 2 | ..... | ..... | 278 |
| Chatham | 27 | 16 | 1,103 | 1,663 |
| Cobourg | 6 | 2 | 51 | 472 |
| Cornwall | 3 | 2 | 178 | 214 |
| Dunville | 9 | 5 | 636 | 1,027 |
| Deseronto | 7 | 5 | 785 | 784 |
| Goderich | 39 | 20 | 867 | 1,998 |
| Hamilton | 47 | 32 | 7,700 | 6,910 |
| Kingston | 206 | 76 | 12,505 | 26,090 |
| Morrisbug | 3 | 1 | 55 | 382 |
| Napanee | 8 | 3 | 302 | 922 |
| Owen Sound | 32 | 29 | 4,833 | 3,379 |
| Ottawa | 196 | 100 | 12,143 | 20,529 |
| Oakville | 4 | ..... | ..... | 323 |
| Prescott | 28 | 14 | 627 | 3,753 |
| Port Burwell | 15 | 6 | 167 | 1,411 |
| Port Arthur | 6 | 6 | 382 | 259 |
| Port Dover | 17 | 4 | 131 | 1,112 |
| Port Colborne | 5 | 2 | 95 | 597 |
| Port Hope | 64 | 38 | 3,031 | 5,788 |
| Port Rowan | 7 | 1 | 168 | 895 |
| Port Stanley | 11 | 9 | 1,864 | 1,482 |
| Pictou | 30 | 9 | 450 | 2,779 |
| Sarnia | 24 | 17 | 7,856 | 6,295 |
| Ste. Marie | 15 | 13 | 538 | 590 |
| St. Catharines | 123 | 54 | 9,127 | 19,895 |
| Saugeen | 7 | 7 | 407 | 277 |
| Toronto | 211 | 142 | 13,057 | 14,533 |
| Wallaceburg | 39 | 21 | 1,458 | 2,506 |
| Windsor | 54 | 26 | 5,720 | 5,466 |
| Whitby | ..... | ..... | ..... | ..... |
| Total | 1,345 | 741 | 92,785 | 138,914 |

| QUEBEC PORTS | | | | |
|---|---|---|---|---|
| Amherstburg, M. I. | 30 | ..... | ..... | 1,098 |
| Gaspe | 40 | 1 | 709 | 2,490 |
| Montreal | 451 | 139 | 51,645 | 78,489 |
| New Carlisle | 16 | 3 | 49 | 800 |
| Perce | 2 | ..... | ..... | 133 |
| Quebec | 865 | 124 | 21,729 | 79,320 |
| Total | 1,404 | 267 | 74,132 | 162,330 |

## Record of Speed and Big Cargoes.

[*Masters or owners are invited to report improvements on this list.*]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company of Milwaukee, 3,507 gross, or 3,944 net tons, Escanaba to South Chicago; E. C. Pope, Eddy Bros. of Bay City, 3,239 gross, or 3,628 net tons, Escanaba to Buffalo, draft 16 feet.

Grain: E. C. Pope, Eddy Bros. of Bay City, 125,730 bushels of corn, Chicago to Buffalo, draft 14 feet 8 inches; Western Reserve, Peter Minch of Cleveland, 112,431 bushels of wheat, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist of Cleveland, 114,982 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

## Iron Mining.

VALUE OF LEADING STOCKS.

*Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.*

| Stocks. | Par Value. | Bid. | Asked. |
|---|---|---|---|
| Cleveland-Cliffs Iron Company | $100 00 | $..... | $ 75 00 |
| Champion Iron Company | 25 00 | ..... | 60 00 |
| Chandler Iron Company | 25 00 | 42 00 | 45 00 |
| Jackson Iron Company | 25 00 | ..... | 100 00 |
| Lake Superior Iron Company | 25 00 | 43 00 | 45 50 |
| Minnesota Iron Company | 100 00 | ..... | 77 00 |
| Pittsburgh & Lake Angeline Iron Co. | 25 00 | ..... | 145 00 |
| Republic Iron Company | 25 00 | ..... | 18 00 |
| Ashland | 25 00 | ..... | ..... |
| Section Thirty-three | 25 00 | ..... | 7 50 |
| Brotherton | 25 00 | 2 00 | 2 50 |
| Iron Belt | 25 00 | ..... | 2 50 |
| Aurora | 25 00 | 8 25 | ..... |

Dispatches announcing a suspension of operations at the Champion mine did not surprise Cleveland iron ore dealers, as it was known that the company had been moving little ore. The sales of the Lake Superior company have also been limited and the disposition of the management is to curtail operations. The Champion is a dry mine and can shut down for a while dur- the prevailing dullness without great loss. There is absolutely nothing doing in iron mining stocks outside of an occasional transfer of Chandler stock at about $45. The enormous output of the Chandler and the fact that the company on July 1 paid the fourth of its regular dividends of $1 every two months have made the stock a favorite.

Shipments of iron ore from Two Harbors up to Wednesday, July 6, aggregated 342,579 gross tons, of which 199,929 tons was from the Chandler and 142,668 tons from the Minnesota mine. On the same date shipments from Ashland aggregated 739,535 tons, divided as follows: Ashland 71,522 tons, Aurora 111,191, Colby No. 2 21,838, Rand, 1,579, Tilden 95,530, Iron Belt 37,219, Montreal, north vein 13,504, Palms 20,983, Section 33, north vein 2,259, Anvil 1,696, Brotherton 38,791, Comet 5,184, Carey 15,157, East Norrie 71,899, Newport 29,140, Norrie 145,007, Pabst 19,789, Sunday Lake 26,424, Windsor 6,131.

Track laying has been begun on the new Duluth, Mesaba & Northern Railroad, and Contractor Donald Grant says a mile and a half of the iron will be laid per day. He also says the road will be ready to take ore from the Biwabik and other Mesaba mines in September. A Port Arthur dispatch says that Minnesota capitalists have contracted with the Port Arthur, Duluth & Western Railway to take 100,000 tons of ore per year for ten years from mines situated in Minnesota, about 4 miles south of Gunflint lake, the terminus of the Port Arthur road.

During the week ending July 2, shipments of ore from Escanaba aggregated in round numbers 171,000 tons. This record can be bettered, however, as the Chicago & Northwestern Railway, since acquiring the Schlesinger road and docks, can handle 40,000 tons a day, or 240,000 tons per week of six days.

C. H. Cady, late superiutendent of the Chapin mine, left Cleveland this week for the Champlain iron district, where he will superintend the mining operations of Witherbee, Sherman & Co. of Port Henry, N. Y. Witherbee, Sherman & Co. is an old and wealthy iron concern.

Another body of ore has been found by the Commonwealth company near the Badger mine, which was developed only re- rently. The ore is a first-class non-Bessemer, and is found near the surface.

## The Canal Tolls Controversy.

In his second message to the senate on the 1st inst., with regard to the controversy between Canada and the United States on the canal tolls question, President Harrison submits documents from Mr. Herbert, acting representative of the British government at Washington, Mr. Adee, second assistant secretary of state, and Mr. John W. Foster, who represented the United States government in the Canadian negotiations, and has since been appointed secretary of state. Mr. Herbert's letter transmitting the remarks of the Canadian government in answer to the memorial of the Lake Carriers' Association, complains of the memorial as being inaccurate in its statement of facts. While admitting that Canada seeks to influence certain traffic to pass down the St. Lawrence to Montreal, however, the letter resorts to the worn out statement about the treatment of the American and Canadian vessels in the canals being equal. In this letter the Canadian government proposes the following arrangement: "That as regards the navigation of the Welland and St. Lawrence canals, the imposition of tolls and the granting of rebates thereon, the same treatment will be accorded to citizens of the United States as is given to the subjects of Her Majesty, without regard to ports of transshipment or export; that the United States will continue to deal in like manner with the subjects of Her Britannic Majesty in the use of the existing Sault Ste. Marie canal, and that the provisions of Article 30 of the treaty of Washington, granting carrying powers to vessels belonging to subjects of Her Britannic Majesty, as described in that article, be restored."

Secretary of State Foster's letter contains a statement regarding the proceedings at the conference of June 4, additional to those made in his previous report thereon. It is to the effect that during the conference the Canadian commission suggested in a tentative way, but without any formal offer of the same as a definite proposition, that an an adjustment of the question as to canal tolls might be reached by the abolition of all rebates on the Welland and St. Lawrence canals, on condition that an assurance be given that the continued free use of the Sault Ste. Marie Canal would be assured to British subjects and vessels, and that Article 30 of the treaty of 1871 be revived in full effect. The suggestion, it appears, was discussed at some length, and the position was maintained on the part of the representatives of the United States that the stipulations of Article 27 were in no wise modified by the termination of Article 30 after ten years and upon two years' notice, and that the obligations of Great Britain under Article 27 were just as binding now as they were before the termination of Article 30. It was further stated on the part of the United States that while the proposition for the revival of Article 30 was one which the executive would regard as a proper subject for reference to congress, it was not one which commended itself to the judgment of the United States as a just and satisfactory settlement of the question of the canal tolls discrimination.

These several documents were accompanied by a very brief message, in which President Harrison declared that the position taken by the government of the United States, as expressed in his previous communications to the senate, viz.: that the canal tolls and regulations of which complaint has been made are in violation of the treaty between the United States and Great Britain is not shaken but rather confirmed, and that there can be no doubt that a serious discrimination against the citizens and the commerce of the United States exists, and quite as little that this discrimination is not the incident, but the purpose, of the Canadian discriminations. Under the circumstances, he says, it has not seemed to him that the case was one in which the United States could yield to the suggestions of further concessions on the part of the United States with a view to securing treaty rights for which a consideration had already been given.

## CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 13 Western Union Building, CHICAGO, Ill., July 14.

The lake front excursion boat war will at once go into the courts, where the contract of the world's fair with the Henry syndicate will be attacked. The case will perhaps be the most interesting ever tried in lake admiralty. Robert Rae will represent the excursion boat owners. He has thrown his professional pride into the case and will make a sturdy fight. The world's fair is none the less determined to sustain the contract, and it will have an able array of legal talent. Most people here are somewhat in doubt as to the outcome, as the law involved is largely an unknown land. In the meantime, the lake front excursion boats have held the fort, and it is evident that the city does not further intend to interfere with them.

The Society for the Prevention of Smoke has given the tug companies notice that afterSeptember 1 all smoking tugs will be prosecuted. That much time is given to put on smoke consuming devices. Perhaps the tugs will all stop smoking Sept. 1, and perhaps all Chicago people will become virtuous at the same date. It is said that wonders will never cease. On the other hand, there is equally good authority for the statement that there is nothing new under the sun. This would bar a Chicago smokeless tug.

The announcement that the Lake Carriers' Association was preparing a protest against the action of the Light House Board in relieving Col. Ludlow and Commander Heyerman was well received here. The first announcement that the Lake Carriers'Association would drop the case was made on the authority of one of its officials. This gentleman said that the two officers were clearly in the right regarding the lights in St. Mary's river, but they had been unfortunate in having their telegrams misconstrued. If the friends of Col. Ludlow, who are numerous at every lake port, have succeeded in finding a way of combating the "discipline" which caused the change there will be general satisfaction. The efforts of both officers for the lake marine have entitled them to the full support of vessel owners. Jealously in the service, however, is a hard thing to combat. These two able officers are not its first victims.

## An Electric Yacht.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D.C., July 14.—The first successful attempt to propel a boat by electricity, generated by an independent primary battery, was accomplished on the Potomac river in this city a few days ago. The Electric is an electrical yacht, fitted out by the Hanson Light and Power Company of this city. The hull was built by Grove of New York. The trial trip was attended by a number of distinguished Washington people. The boat's propelling power consists of a "Riker" battery of 2¼ horse power, with thirty cells of the Hanson patent in parallel, the total weight of which is 1,450 pounds. The yacht is 21 feet long and 5 feet beam. In the bow she carries a tank for extra solution to recharge the batteries. The first charge will run for twenty-four hours consecutively, and the tanks hold enough for forty-eight hours more.

## Canada's Governor General on the Canal Question.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., July 14.—The house of commons prorogued on Saturday and the governor general in his closing speech, made an important reference to the canal tolls matter. He said: "A representation has been made by the administration of the United States that the schedule of tolls which has been in force on the Canadian canals for some years past operates to the disadvantage of the shipping and products of United States citizens on the great lakes. This complaint has been examined and discussed with the authorities of the United States. A proposal has been submitted on behalf of my government, that the United States restore the concessions that were made on the part of that country by the treaty of Washington as an equivalent for concessions on the part of Canada as to the canals, but which were withdrawn by the United States without any cause so far as canada is concerned. This proposal has not yet been replied to, but it is hoped that the fairness of the position taken by my government will be duly appreciated by the government of the United States, so that all further misunderstanding on this question may be avoided."

Vessel owners here are of the opinion that the complained of discrimination would be removed at once if the proposal made to the United States government be approved of.

The reciprocity in wrecking bill has been passed by parliament and only remains to be signed by the governor general in order to become a law. It is therefore in the same position that the American bill of the same nature occupies. Under existing circumstances, however, it is impossiblo to say when the law will come into force.

Capt. Thomas Collins, a veteran lake and river man, died at Clayton on Friday.

The large schooner Minnedosa, owned by the Montreal Transportation Company, was loaded at Fort William with 62,000 bushels in one hour and twenty minutes. On her way down she leaked so much that she was placed in dry dock. Two open augur holes were found in her bottom out of which the plugs had disappeared.

## Proposed Passenger Liners.

Special Correspondence to the MARINE REVIEW.

BUFFALO, N. Y. July 14.—During the absence of General Manager Gordon it is impossible to learn any of the details of the two proposed passenger liners. There are a number of stories going the rounds in connection with the news of the contract, but none have been authorized by the company. They are interesting, however, in showing that the passenger business of the lakes is capable of great development. One story is that the two liners will be run in a manner similar to limited express trains between Buffalo and Duluth, stopping at Detroit, rounding to at Mackinaw and then stopping at the Sault, connections being made at these points with auxiliary steamers, which will pick up passengers and freight at Lake Erie, Lake Michigan and Lake Superior south shore points. The two boats must make 18 miles an hour running regularly. To do this the hulls will be modeled finer than anything on the lakes, and the engines will be larger than any now in lake practice. To furnish steam for such engines eight, or at least six, large boilers will be used. The contract price has been mentioned as $400,000 each, but it is claimed that $1,000,000 has been appropriated for the steamers and completion of their running arrangements. Capt Murch, who represented the Northern line in the building of its freight boats in Cleveland, left the Avon and it is understood that he will look after the construction of the new steamers.

Some time ago a young man dressed in white flannel coated with yellow clay rushed into Maytham's tug office about 3 o'clock in the morning, and between gasps stated that his yacht was ashore up the lake a couple of miles. It was a very thick night, but Capt. Maytham asked him how he happened to get on with a yacht.

"Its all on account of that book, the coast pilot; it says that you can see that red light 12 miles, and you cant see it two sir." Several lake men joined in the roar that followed, but nobody had the heart to tell him that a light that can be seen twelve miles on a clear night can't be seen one mile on a thick night.

David Bell will launch the steel fire boat City of Buffalo within a few days. It is neatly modeled and ought to make a serviceable fire boat. The dimensions of the boat are 75 feet keel and 20½ feet beam, and she has a pair of engines 17 by 17 inches, getting steam from an 11-foot Scotch boiler, built by Farrar & Trefts. The capacity of fire pumps is 4,000 gallons per minute. The yard number of the boat is 41.

## Planning for a Nautical School on the Lakes.

The following letter from E. C. O'Brien, commissioner of navigation, explains itself:

EDITOR MARINE REVIEW:—I would like your views as to the practicability of the establishment of a nautical school on the great lakes, for the education and training of American boys for a sea-faring life, and more particularly as regards a continuance of an adequate supply of efficient officers and seamen, for the already, and rapidly increasing merchant vessels on these mid-continent seas.

It is suggested that the government should assist in the matter, by placing a school-ship at some proper point, and detailing competent instructors from the different services of the United States. American boys could then be given a special training to meet the peculiar conditions of navigation on the lakes, that it would be difficult to secure by any other means; and the country would have in a short time, "a self-supporting militia of seamen or naval reserve for the great lakes, a force of inestimable value to any nation that aspires to naval or commercial greatness." If the project is favorably considered some legislation would be required by congress to accomplish the desired object.

I will thank you to give the matter an early consideration.

E. C. O'BRIEN,
Commissioner.

Treasury Department, Bureau of Navigation,
Washington, D.C., July 7, 1892.

## Notices to Mariners.

The July bulletin from the light-house board, with reference to recent changes in aids to navigation, calls attention to notices already given out on the lakes, among them the change in position of the skeleton iron tower at the west pier, entrance to Huron harbor, Lake Erie, and several changes in the buoyage of Beaver island channel and Poverty island passage, Lake Michigan. Masters would do well to secure copies of these bulletins every month from the light house board, Washington, or from the light-house inspectors at Buffalo and Chicago.

Commander Woodward, inspector of the Eleventh light-house district, gives notice that the Outer island (Lake Superior) fog signal is disabled and will not be in operation until repaired, which will be done as soon as possible.

Additional assignments of official numbers as follows were made by the commissioner of navigation during the week: Steam-Codorus, Erie, 2,165.67 tons gross, 1,802.08 net, No. 126,866; J. D. McFadden, Duluth, 15.20 tons gross, 7.60 net, No. 77,041. Sail-Rambler, Cleveland, 9.73 tons gross, 9.25 net, No. 110,984; Maggie, Chicago, 8.74 tons gross, 8.05 net, No. 92, 451.

## The Cruiser Chicago.

As flag ship of the White Squadron, the cruiser Chicago, named for the leading city of the lakes, has been generally admired, and she has proven herself an excellent and serviceable vessel. She recently returned to the New York navy yard from a cruise along the coast of South America. The illustration on this page was prepared by the Railroad and Engineering Journal of New York, from a photograph taken a short time ago.

The Chicago was built at the Roach yards in Chester, Pa. She is an unarmored steel cruiser with protective deck, and is 315 feet long, 48 feet 2 inches beam, 19 feet mean draft, and 4,500 tons displacement. She has three masts, and is bark-rigged, carrying more sail than most of the new cruisers. She has twin screws driven by compound engines, and her recorded speed is 15 knots an hour. Her coal capacity is 940 tons, and on that supply the cruising range is 6,000 knots at a 10-knot speed.

The main battery consists of four 8-inch, eight 6-inch and two 5-inch breech-loading rifles, and the secondary battery includes 12 small rapid-fire and machine guns.

## Grain at Chicago and Duluth.

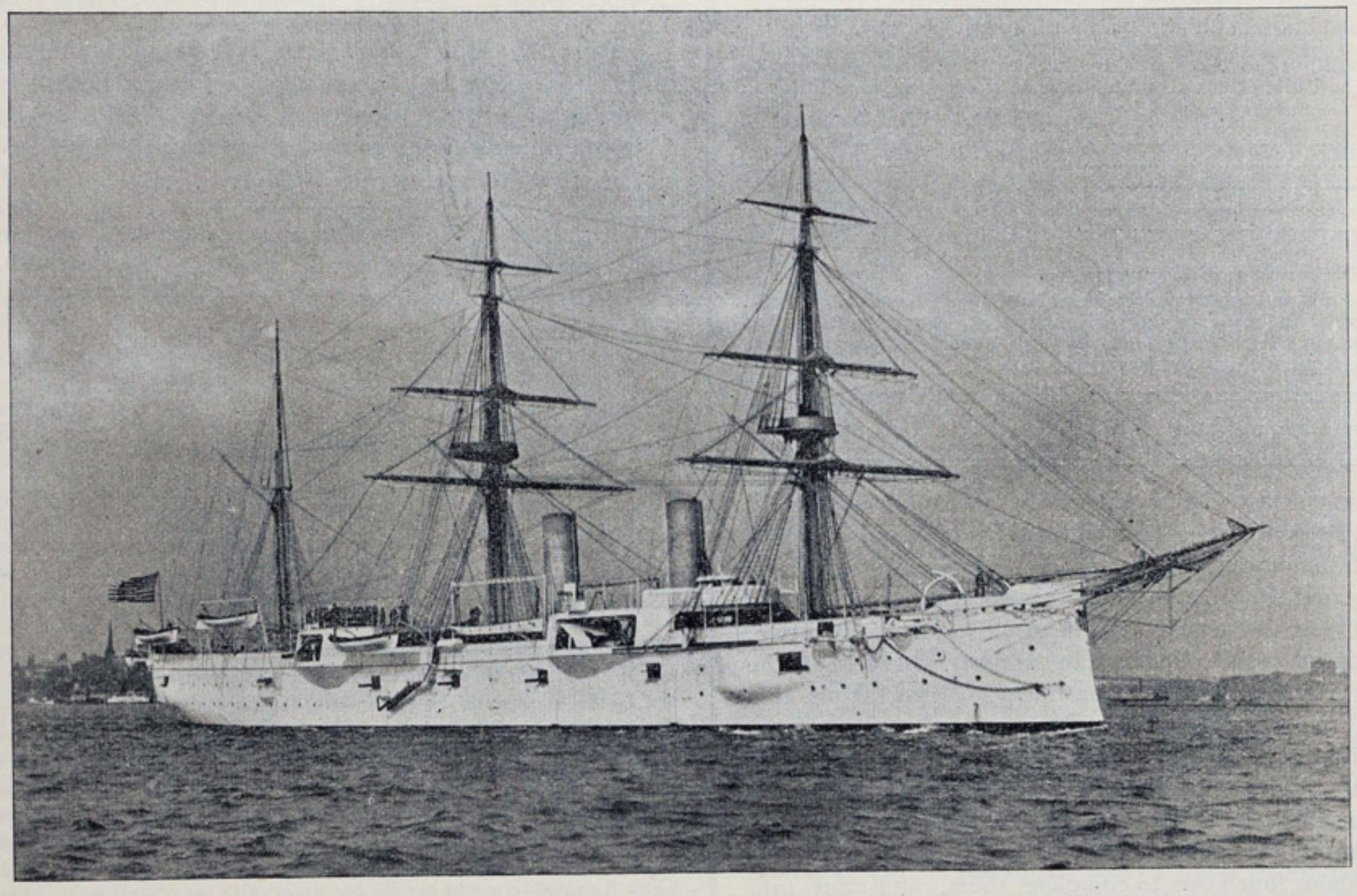
Stocks of grain at Chicago and Duluth on Monday, July 11, were as follows:

| | Chicago. | | Duluth. |
|---|---|---|---|
| | Wheat, bu. | Corn, bu. | All wheat, bu. |
| In store | 4,678,000 | 4,118,000 | 3,541,000 |
| Decrease last week | 285,000 | ..... | 367,000 |
| Increase last week | ..... | 375,000 | ..... |

In addition to the above there is 1,470,000 bushels of oats, 100,000 bushels of rye and 22,000 bushels of barley in store in Chicago.

## The American Water Transportation Company.

A dispatch from Chicago a few days ago announced that the American Water Transportation Company, capital $1,000,000, had been incorporated under the laws of Illinois, although the promoters of the company were from Cleveland. Martin A. Mayo, Lon M. Snyder and Frank Briggs were named as incorporators. Frank Briggs has been engaged in the coal business in Cleveland and has had some experience in lake shipping matters. He recently constructed a model of a steambarge divided into eight or ten compartments entirely separate of each other, each resting on scales in the lower part of the hold and fitted to discharge from the bottom into a continuous belt system after the methods in use in grain elevators. Big elevator tubes forward are connected with the continuous belt system in the hold and are intended to discharge cargo. Without much study of the invention it will readily be seen that Mr. Briggs' boat would, if built, carry a very small load. He has spent a great deal of time and some money on the model. The object of incorporating under Illinois laws is probably to evade expense of incorporation dues in Ohio. It is not probable that the million dollar company will revolutionize the water carrying trade at once.



UNITED STATES CRUISER CHICAGO.

## Conneaut Preparing for Lake Business.

Another Lake Erie port, Conneaut, O., will undoubtedly get a share of the coal and iron ore business of the lakes, beginning with the close of the present season. Hon. S. B. Dick and Mayor A. C. Huydekoper of Meadville, Pa., together with other capitalists of Youngstown, O., and Meadville owning coal and iron properties, have already constructed a railroad from Conneaut to Pittsburgh, having entrance into the latter city from Butler, Pa., over the Pittsburgh & Western Railway. The new road is now doing some business between Erie and Pittsburgh, by using the Nickel Plate between Conneaut and Erie. Capt. Day, who was in charge of the N. Y. P. & O. ore docks in Cleveland for a number of years, has gone to Conneaut to look after the construction of docks for the new company. The track is all laid to the dock site. Conneaut harbor is one the finest on Lake Erie. There is 16 feet of water for a great length of the river within the harbor and the bottom is very soft. The river and harbor bill gives the harbor an appropriation of $50,000. This will serve to give a good entrance to the river.

A Washington dispatch, published at the time of our going to press, says that the state department is informed that the Canadian government has put an end to the canal tolls controversy by granting all that the United States government asks for in the matter of tolls. The story is very probably of the sensational order.

# MARINE REVIEW.

*DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.*

JOHN M. MULROONEY, . . . . . } PROPRIETORS.
F. M. BARTON, . . . . . }
HOMER J. CARR, . . . Associate Editor and Manager Chicago Office, Western Union Building, 110 LaSalle Street.

Published every Thursday at No. 516 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—$2.00 per year in advance. Convenient binders sent, post paid, 75 cents. Advertising rates on application.


The books of the United States treasury department contain the names of 3,600 vessels, measuring 1,154,870.38 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of vessels of 1,000 to 2,500 tons on the lakes on June 30, 1891, was 310 and their aggregate gross tonnage 512,787.58; in all other parts of the country the number of this class of vessels was, on the same date, 213 and their gross tonnage 319,750.84. The classification of the entire lake fleet is as follows:

| Class. | Number. | Tonnage. |
|---|---|---|
| Steam vessels | 1,592 | 756,751.53 |
| Sailing vessels | 1,243 | 325,131.06 |
| Canal boats | 703 | 72,515.42 |
| Barges | 62 | 20,472.37 |
| Total | 3,600 | 1,154,870.38 |

Tonnage built on the lakes during the past five years, according to the report of the United States commissioner of navigation, is as follows:

| | No. of boats. | Net Tonnage. |
|---|---|---|
| 1887 | 152 | 56,488.32 |
| 1888 | 222 | 101,102.87 |
| 1889 | 225 | 107,080.30 |
| 1890 | 218 | 108,515.00 |
| 1891 | 204 | 111,856.45 |
| Total | 1,021 | 485,042.94 |

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

*Entered at Cleveland Post Office as Second-class Mail Matter.*

AS FINALLY sent to the president the river and harbor bill carries direct appropriations aggregating $21,153,618, and authorizes contracts amounting to $31,555,401, a total of $52,709,019. The Fifty-second congress has certainly shown its appreciation of the benefits of water transportation to the country at large, and the wonderful reduction shown in carrying charges on the great lakes has been an important factor in bringing about this result. The importance of the continuous contract system, as adopted originally in the first session of the Fifty-first congress, can be measured by the liberal amount of appropriations insured for the future. There is no doubt of the benefits to be derived from the continuous contract policy. These contract works will require about four years to complete them, and four into $53,000,000, the amount involved, is only a little over $13,000,000 per annum for the next four years, "an insignificant sum," as Congressman Blanchard said on the final passage of the measure, "in comparison with the magnitude of river and harbor interests in this country."

BEFORE Gen. Poe and Col. William Ludlow of the army engineer corps became favorably known, in their work of directing river and harbor improvements, to the shipping interests of the lakes, there was no such regard here for army and navy officers as that now existing among vessel owners. These officers have done much to show that the heads of the service which they represent are desirous of keeping in touch with the interests directly concerned in river and harbor improvements. Col. Ludlow has been especially active in this regard and his intentions have always been for the general welfare. It is only right, therefore, that nothing should be left undone in the efforts to convince Washington authorities that his suspension from the light-house service resulted from a misapprehension of the facts in the case.

WITHIN a few days there will be delivered to the officers of the United States light-house service in New York two lake-built vessels for coast service. The first is one of four light-ships building by W. F. Wheeler & Co., of West Bay City. This vessel, to be known as Cornfield Point light-ship, No. 51, is undoubtedly the finest light-ship ever constructed in this or any other country. The second vessel, which will arrive a few days after the light-ship, is the light-house tender Lilac, the first of two vessels for which a contract was made with the Globe Iron Works Company, Cleveland, about a year ago. The tender Lilac is in appearance as fine a ship as has ever been turned out on the lakes, and there is little doubt that all of these boats will reflect credit to lake builders.

A CORRESPONDENT seeking for information from the Detroit News, is told that a dam at the head of Niagara river would raise the water in Lakes Erie and Michigan. A very large dam would certainly be required. Probably the News has overlooked a rise of more than eight feet in the rivers between Lake Erie and Lake Michigan, or Lake Huron, which has the same level as Lake Michigan.

IT IS the settled law of the federal courts that an express stipnlation exempting a common carrier, whether foreign or domestic, from liability for losses caused by the negligence of himself or his servants, is contrary to the public policy, and can not be enforced against the shipper.

READERS of the REVIEW are requested to send us at all times brief correspondence of a marine nature. Our columns are always open for the discussion of subjects relating in any way to the advancement of lake interests.

## Coal Statistics, St. Mary's Falls Canal.

The following letter from Gen. O. M. Poe, relative to the coal traffic of the St. Mary's Falls canal, explains itself:

GENTLEMEN:—I am in receipt of yours of the 9th inst., suggesting that in the record of the movement of coal through St. Mary's Falls canal, the respective quantities of bituminous and anthracite coal be stated. I thank you for the suggestion, and will give it careful consideration. It would not be practicable this season to do much towards it, because vessels are all supplied with blanks for reports, and before these could be recalled and new ones printed and issued, the season would be so far advanced that the resulting record would have but little value in the attempt to separate the two kinds of coal.

In this connection I may remark that there is danger of carrying this matter of collection of statistics so far as to make it irksome to the vessel men, causing them to lose interest, with resulting vitiation of the record, either intentionally or negligently. From other sources I have had suggestions touching this part of our rocord, and one remarkably well informed man proposes such an extension of the system that additional clerical assistance would have to be employed to maintain it. He thinks this would be no objection, and theoretically it probably would not be, but practically the objection is quite serious. Before the opening of next season, however, I will try to formulate blanks which will add to the information in our record, and it is not impossible that I may succeed. Your suggestion is the least difficult of all I have thus far received. Should anything further occur to you in this connection I will be obliged to you for information in regard to it.

O. M. POE,
Colonel, Corps of Engineers, Bvt. Brig. Gen. U. S. Army.

UNITED STATES ENGINEER OFFICE,
No. 34 West Congress Street,
July 12, 1892. Detroit, Mich.

## Official Numbers and Tonnage.

The bureau of navigation, E. C. O'Brien commissioner, assigned official numbers to the following lake vessels during the week ending Saturday, July 2: Steam—Mariposa, Cleveland, 2,831.32 tons gross, 2,306.78 net, No. 92,448; W. H. Gilbert, Detroit, 2,820.30 tons gross, 2,200.45 net, No. 81,382; City of Venice, Port Huron, 2,107.92 tons gross, 1,771.08 net, No. 126,885; Columbia, Grand Haven, 120.24 tons gross, 73.37 net, No. 126,882; Sunol, Cleveland, 62.46 tons gross, 31.23 net, No. 116,511; Islay, Marquette, 26.69 tons gross, —— net, No. 100,535; Zagara, Oswego, 21.19 tons gross, 10.60 net, No. 28,122; Hazel, Rochester, 46.58 tons gross, 36.13 net, No. 96,184. Sail—May C., Chicago, 8.29 tons gross, 7.88 net, No. 92,449.

Send 75 cents to the MARINE REVIEW for a Binder that will hold 52 numbers.

We are indebted to the department of railways and canals, Canada, for a copy of the tariff of tolls on government canals for 1892.

Port Huron wreckers with the steamer Henry Johnson have gone to Green bay and will make an effort to raise the steamer Ogemaw, which foundered in that locality last fall.

The new steel steamer Cadillac, built by the Chicago Ship Building Company for the Cleveland-Cliffs Iron Company, brought down from Marquette on her maiden trip 2,126 gross tons of ore. The Cadillac is 250 feet over all.

The schooner Owosco, owned by J. M. Jones & Co. of Detroit, which went to a Massachusetts port in the spring of last year, was wrecked off Halifax, N. S., last week while on her way from Philadelphia to Montreal with coal. She was not insured.

Capt. A. A. Cox, commodore of the Davidson fleet and lately in the steamer City of Berlin, will command the City of Venice, the first of the new wooden steamers to leave Davidson's West Bay City yard this spring. Joseph R. Mason is the chief engineer.

United States District Judge Deady of Portland, Ore., has rendered a decision in the salvage suit of the steamer Zambesi against the whaleback steamer Charles W. Whetmore. The decision awards $20,000 to the Zambesi. The amount sued for was $250,000.

The steamer Progress, sunk recently in the Detroit river and purchased from the insurance companies by the Detroit Dry Dock Company for $11,500, will be raised by the Murphy Wrecking Company. The price agreed upon for the work is reported at $13,000.

A breaking of Lake Superior cargo records, even on the present draft of water in the St. Mary's Falls canal, may be expected when the big steel boats of the Minnesota Steamship Company as well as the steamer W. H. Gilbert, built by F. W. Wheeler & Co. of West Bay City, get to making regular trips.

It is announced by the management of the Empire Portable Forge Company of Lansingburg, N. Y., that hereafter Mr. S. C. Gault will be associated with them as a representative "on the road." The REVIEW wishes Mr. Gault every kindness at the hands of purchasers on the lakes of the goods of this company.

A rear paddle wheel steamer, the Valley City, built by the Craig Ship Building Company of Toledo, will begin service next week on Grand river, between Grand Rapids and Grand Haven. The steel hull is 170 feet extreme length and 29 feet beam, and the boat loaded will draw 5 feet of water. Capt. John M. Mitchell of Toledo, who owns a half interest in the boat, will be the commander, and John F. Craig of Toledo general manager.

The Woodland Beach Company, a Buffalo corporation engaged in excursion business, has purchased the steamer Corona from the Goodrich Transportation Company of Chicago. The Corona is a sidewheel steamer 172 feet long, 45 feet beam and 11 feet depth of hold. She was built at Manitowoc in 1869 and registers 874 tons net. The boat received extensive repairs recently and is valued at about $20,000.

Dunbar & Sullivan, dredging contractors of Sault Ste. Marie, Mich., have secured contracts for excavation on two more sections of the St. Mary's Falls canal work. The sections comprise 138,700 and 138,800 cubic yards, for which the contractors will receive $212,211 and $204,036 respectively. The excavating is chiefly through what is known as Potsdam sandstone rock, in stratified layers of varying thickness. The specifications require that the work shall be completed within two years.

Capt. William McKay of the steamer Greyhound, who is charged by Custodian Mott of the St. Clair Flats canal, with running past the barge F. D. Ewen in the canal, has been ordered by United States Commissioner Graves of Detroit to appear before United States District Judge Swan when called upon. This probably means that Capt. McKay will be given a hearing in court after the close of navigation If it is shown, as Capt. McKay claims, that no violation of the canal rules was intended and that the Greyhound avoided damage by passing the Ewen, it is probable that the case will demand little attention.

Mr. Samuel Holmes of New York, vice-president of the Saginaw Steel Steamship Company, owning the steamers Mackinaw and Keweenaw, built by F. W. Wheeler & Co. of West Bay City, was in Buffalo last week. The boats are now engaged in the coal trade between Puget sound and San Francisco, and Mr. Holmes is greatly pleased with their work. Although they are of only ordinary length and breadth as compared with modern steel steamers on the lakes, they carry 3,600 tons of cargo and 300 tons fuel on 23 feet draught. Their average speed is about 11 knots.

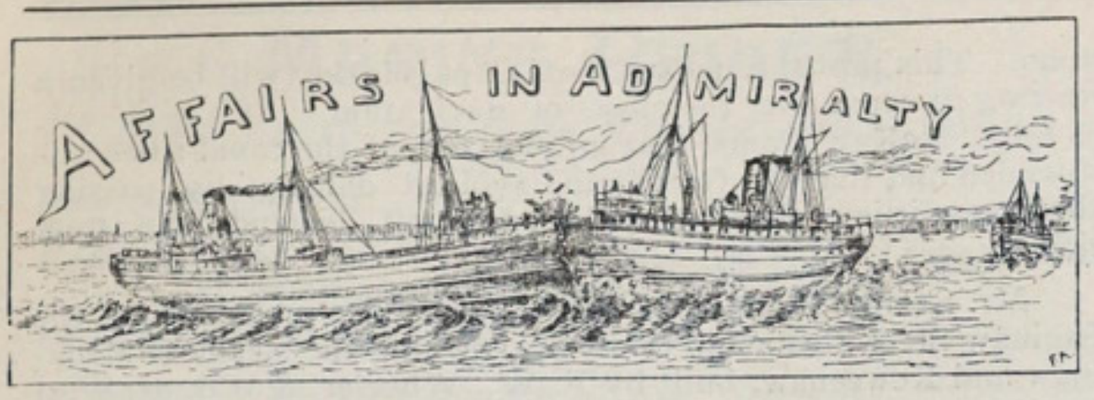
The Milwaukee Evening Wisconsin says of the Goodrich Line twin screw steamer Virginia: "Although the average time of her arrival here daily from Chicago may have led many to a contrary belief, it is nevertheless a fact that the Virginia is making a better record for speed than last season. Her machinery is in perfect working order, and the forced draft apparatus enables her to keep up a good head of steam without discomfort to the firemen. The three-bucket solid wheels can also be turned up much faster than the discarded sectional wheels. On her first run from Manitowoc to Chicago she covered the distance to her destination from a point abreast of Milwaukee at a speed of 18½ miles an hour without being crowded. Her average daily speed is now placed at about 18 miles an hour. The forced draft apparatus not alone effects a marked reduction in the quantity of coal consumed, but a grade of fuel costing $1.75 per ton less than the best can be utilized to good advantage."

## How to Fire a Boiler.

Mr. Richard Hammond, of the Lake Erie Boiler Works, Buffalo, read a paper at a recent meeting of the National Electric Light Association, on "How to Fire a Boiler." Mr. Hammond held that in a great many cases waste of fuel can not be entirely charged to improper firing. Other causes produce a waste of the evaporating power of the fuel. Principal among these are the improper construction of the boiler in relation to grate surface, tube area, heating surface, and combustion chambers. Unless these proportions are properly worked out (it matters little whether the firing be done by mechanical means or by the more intelligent fireman), waste of fuel must necessarily follow. Just as good results can be obtained from hand-firing as have been obtained by the best mechanical means.

"Experiment has proved," said Mr. Hammond, "that bituminous coal requires 150 cubic feet of air per pound of coal for good combustion. An excess of air results in a waste of heat which it carries into the flues and chimney, and often a greater loss in an insufficient supply to produce good combustion. In my experience, for steam plant boilers carrying 80 to 160 pounds of steam, I find that at least 20 pounds of bituminous coal should be burned per square foot of grate per hour, and the air spaces of the grate should not be less than 50 per cent. of the grate area and the draught-pressure not less than 2½ inches of water. If the grate surface is so large that only 10 pounds of coal are consumed, it would be more economical to reduce the grate surface and burn not less than 20 pounds with good draught, thus securing a good combustion. The same weight of coal burned on a large grate would not be as economical on account of low temperatures. The temperature of the furnaces should not be less than 3500° and the ratio of the draught area through the tubes or flues should not be less than one-sixth nor more than one-fourth of the grate surface, and the proportion of heat surface to grate surface shoud be at least as 35 to 1.

"Under the conditions just stated boilers should be fired very economically, whether done by mechanical means or by hand. I have noticed in firing marine boilers on the great lakes that the firemen spread their coal evenly over the entire grate at each firing and they produce steam very economically, while firemen on coastwise steamers will pile up the coal just inside the furnace door and as it becomes coked will rake it back over the incandescent fire and grate with equally as good but no better results in the way of economy than obtained by the lake firemen. Both of these ways of firing are equally good, but in all cases the grate bars should be entirely covered and the amount of air required above the grate should be admitted from above instead of below the grate."




Owners and masters of harbor tugs will be interested in the decision of Judge Jenkins of the United States district court, Milwaukee, in the case of the owners of the schooner Butcher Boy against the tugs Nelson and Spaulding, here given in full: On September 29, 1889, the schooner Butcher Boy was proceeding up Lake Michigan, and was some three miles to the southward of the east entrance of the Sturgeon bay canal, intending to pass through the canal. The tugs Jessie Spaulding and George Nelson, of about equal speed, were lying moored to the dock near the east mouth of the canal. Both started in pursuit of the tow. The Spaulding got away first, immediately followed by the Nelson. Within a half mile the gap was closed, and the tugs proceeded abreast, at a speed of 12 miles an hour, within 50 feet of each other, the Nelson being on the starboard side of the Spaulding. They thus proceeded at full speed until they arrived abreast of or a little to the southward of the Butcher Boy, on the port side; the Spaulding being about 1,000 feet away, the Nelson 50 feet further away and a half length in the lead. At this point, and almost simultaneously, the tugs began to round to alongside the Butcher Boy. The Spaulding, having a shorter turn to make, forged ahead of the Nelson about a quarter of her length, and had come around so that her bow was headed about north-east to the forward quarter of the schooner, and was still swinging with her wheel hard astarboard, and but for the collision would have swung clear of the Butcher Boy. The Nelson swung in towards the Spaulding, was caught in her suction, and they collided; the Nelson striking the Spaulding on her after starboard quarter, abreast of her engine room door. Both tugs at this time were under full speed. The blow caused the Spaulding to list over on her port side, changing her course to easterly, and heading her directly towards the schooner. Both tugs reversed their engines, but were unable to stop their headway in time. The bow of the Spaulding was driven violently against the schooner, striking her on the port side about amidships, causing damage. The Nelson was at fault. She was the overtaking vessel, and was bound to keep out of the way of the Spaulding. It is a mistaken idea that, because at the moment of turning the Nelson was in the lead by half a length, she ceased to be the overtaking vessel. She retained that character until she had completely passed the Spaulding. Here both vessels had a common object, to attain which on the part of the Nelson it was necessary for her, being to starboard, to cross the course of the Spaulding to her port side, in order to first reach the schooner. The Spaulding, as the leading vessel, was entitled to hold her course. The Nelson remained the overtaking vessel until she had so far passed the Spaulding that she could safely cross the latter's course, or safely intervene between her and the schooner. The Nelson had full knowledge of the position and course of the Spaulding. The Spaulding was not at fault. She had the right, if she could, to maintain the lead, so long as she did not improperly interfere with the Nelson. Each had the right to move at full speed, navigating properly to avoid collision. But for the Nelson's faulty management the Spaulding would have cleared the schooner. Immediately upon the collision she reversed her engine and took all possible action to avoid striking the schooner. The decree is for the libelants, owners of the damaged schooner, and the Spaulding is dismissed, with costs against the owners of the Nelson.

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United States District Judge Nelson of Massachusetts decided a case a few days ago in which the causes for action were similar to conditions often arising on the lakes. A schooner drawing 11 feet 8 inches, loaded with coal owned by and consigned to the defendants under a bill of lading guarantying to her generally 12 feet of water, arrived at the defendant's dock. One of the defendants was present at the schooner's arrival, but said nothing to the master. The latter was unacquainted with the condition of the channel. The schooner struck a ledge of rock, on which at average water there was but 12 feet. Defendants did not own the bed of the river but dredged it and used the wharf to berth vessels. The court held that the master had a right to rely on the defendant who was present, and his silence amounted to an express invitation to enter. Defendants were therefore liable. The title of the case is Hall et al. vs. Sheppard et al.

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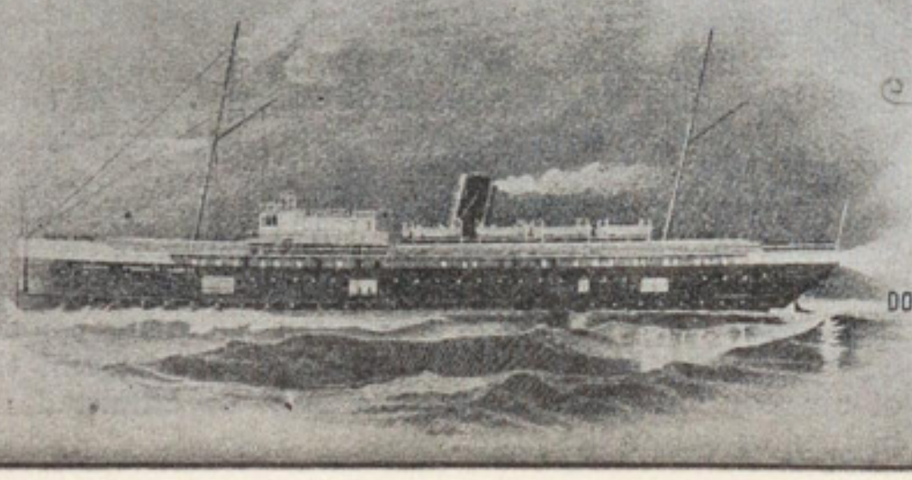

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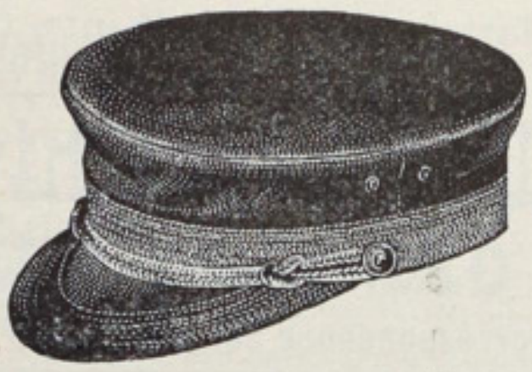

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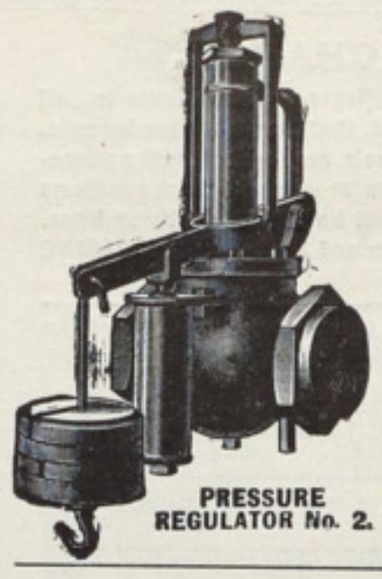


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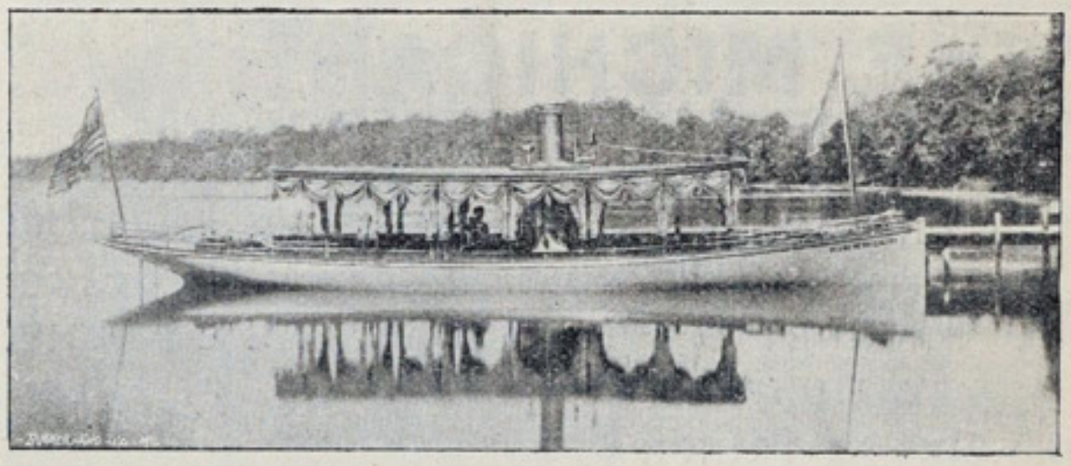

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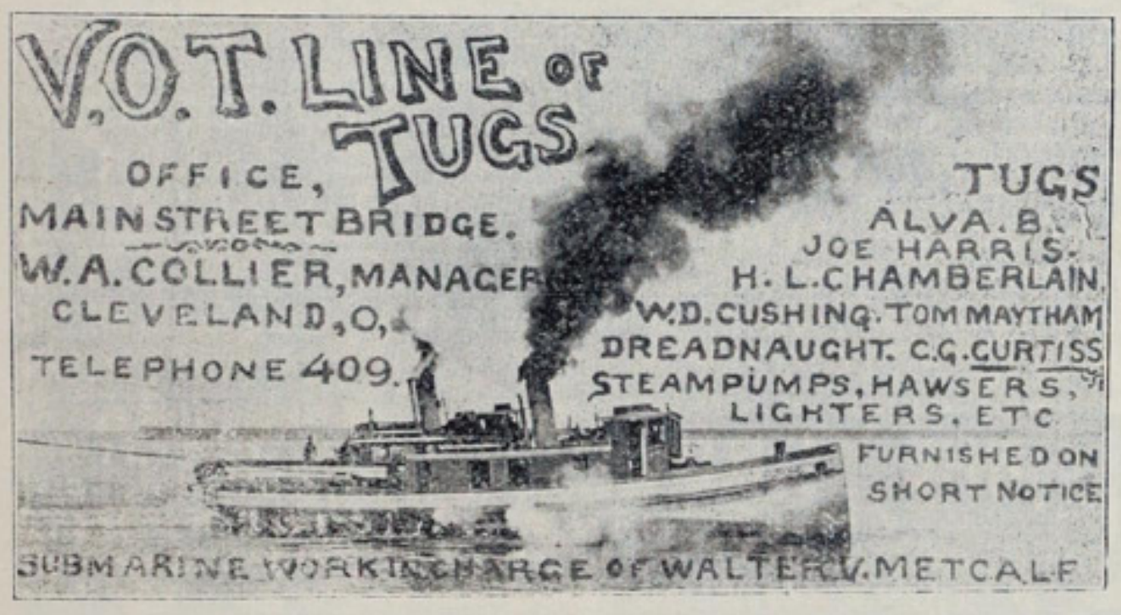


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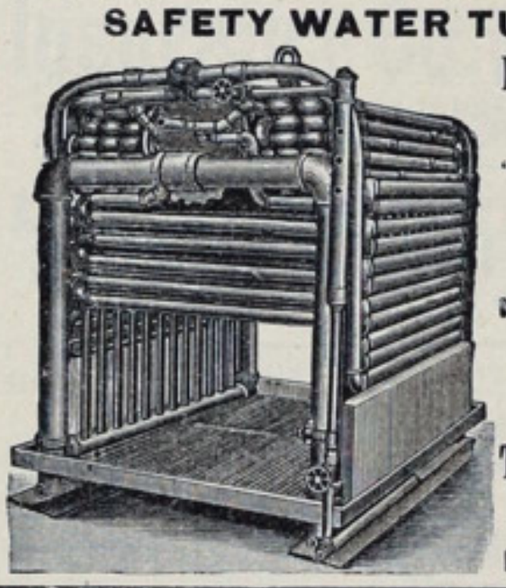

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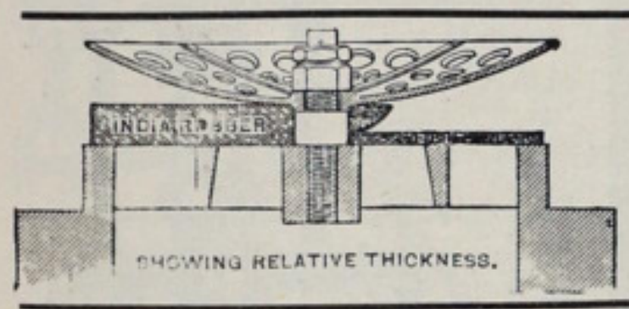


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**Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Employers in need of professional men or men who want positions may avail themselves of the opportunities offered. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 516 Perry-Payne Building, Cleveland, O.**

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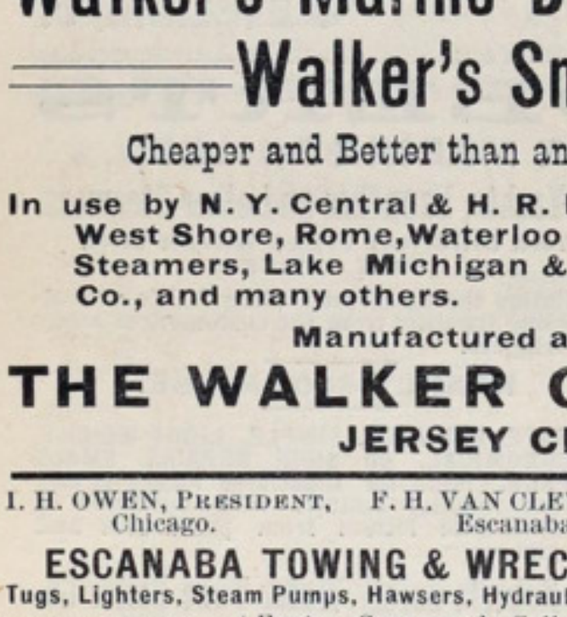

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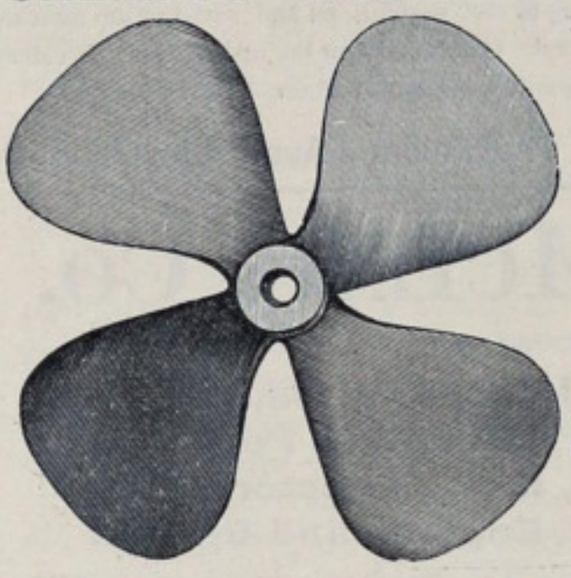

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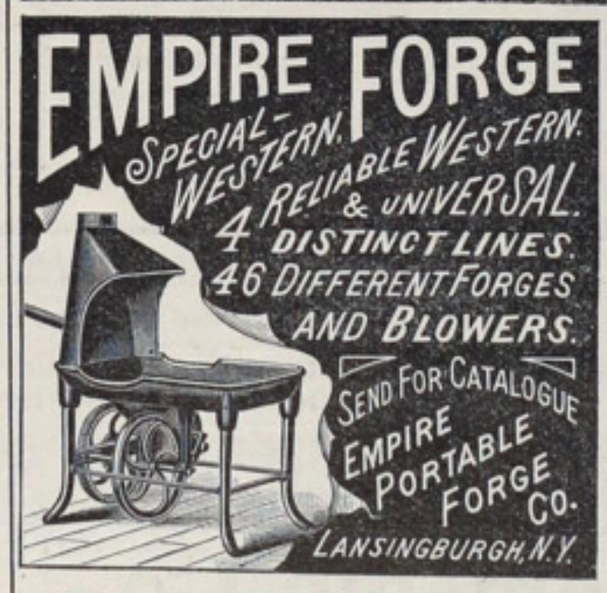


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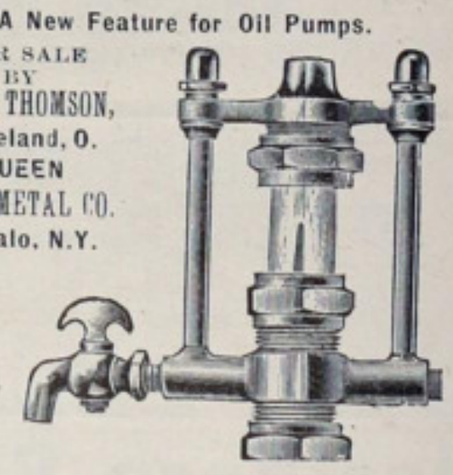

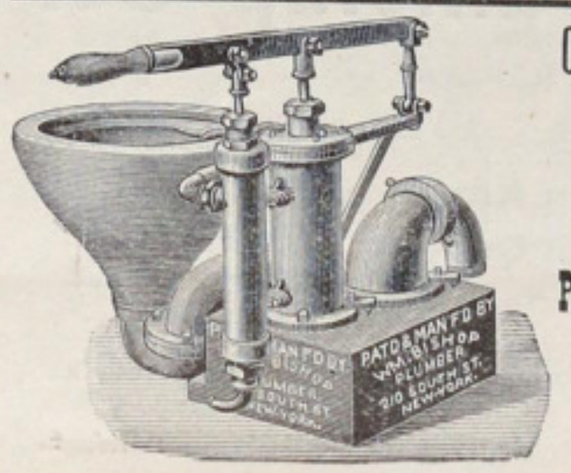


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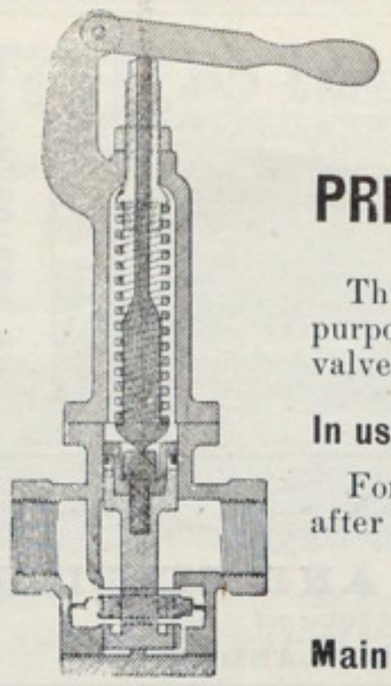

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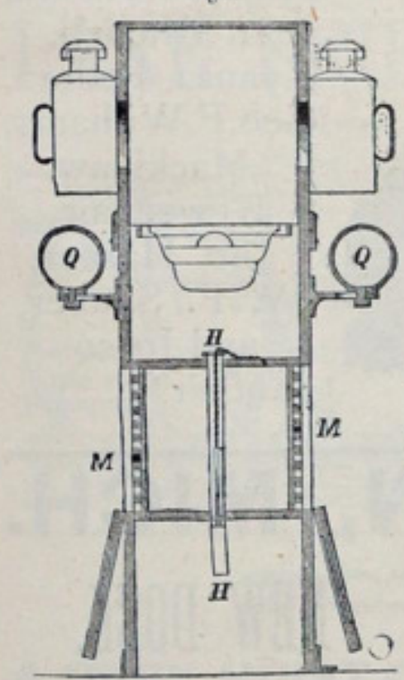

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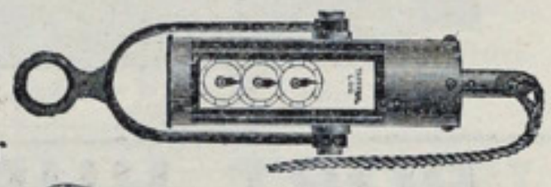

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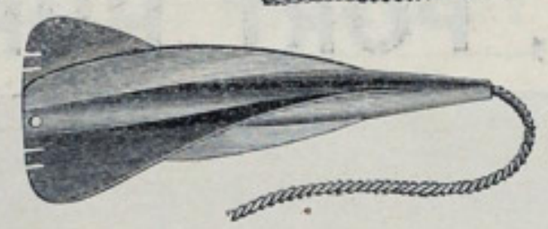

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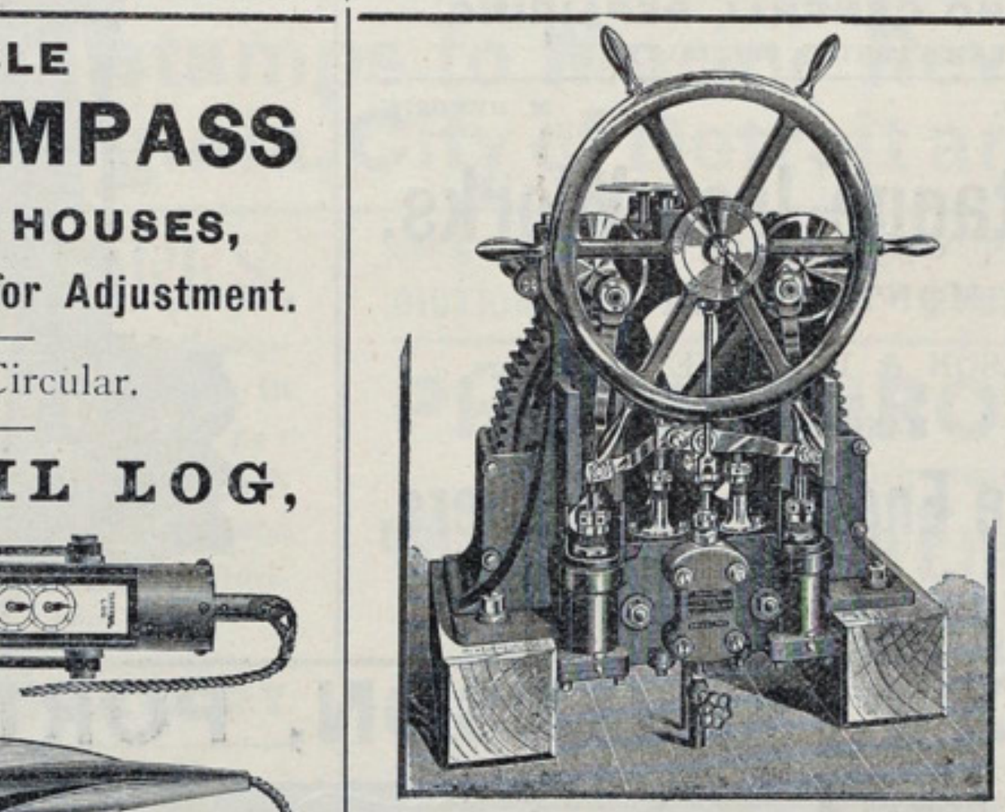

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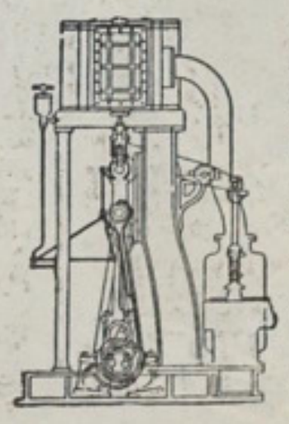

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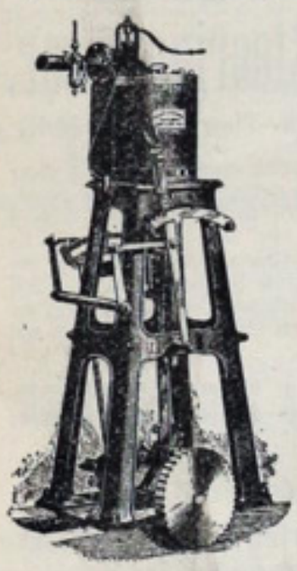

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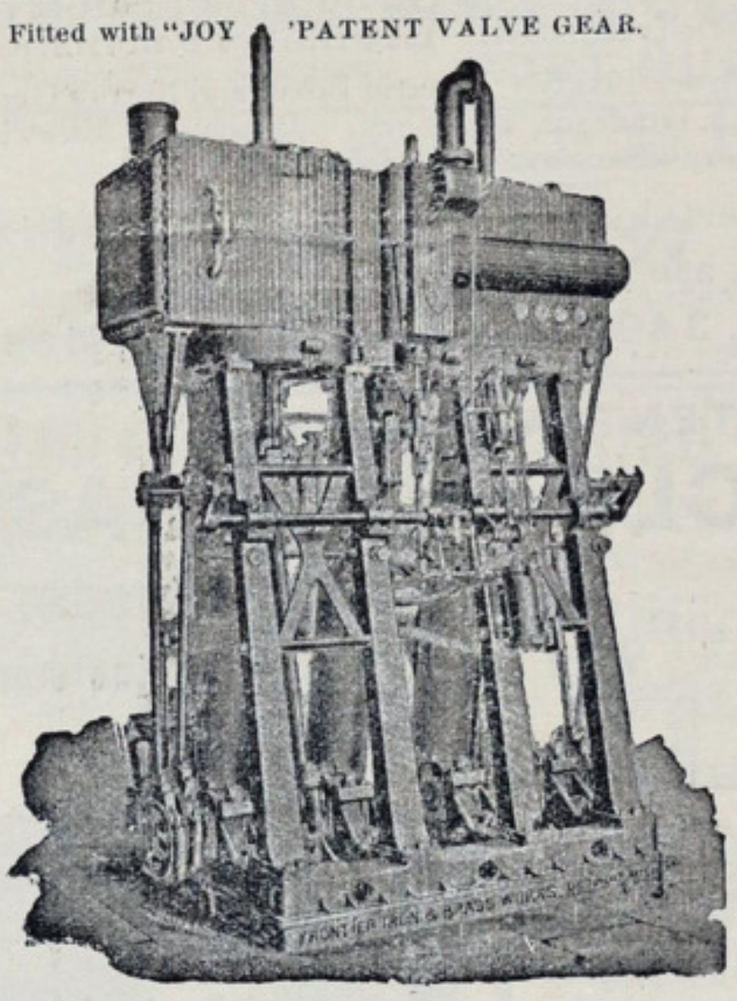

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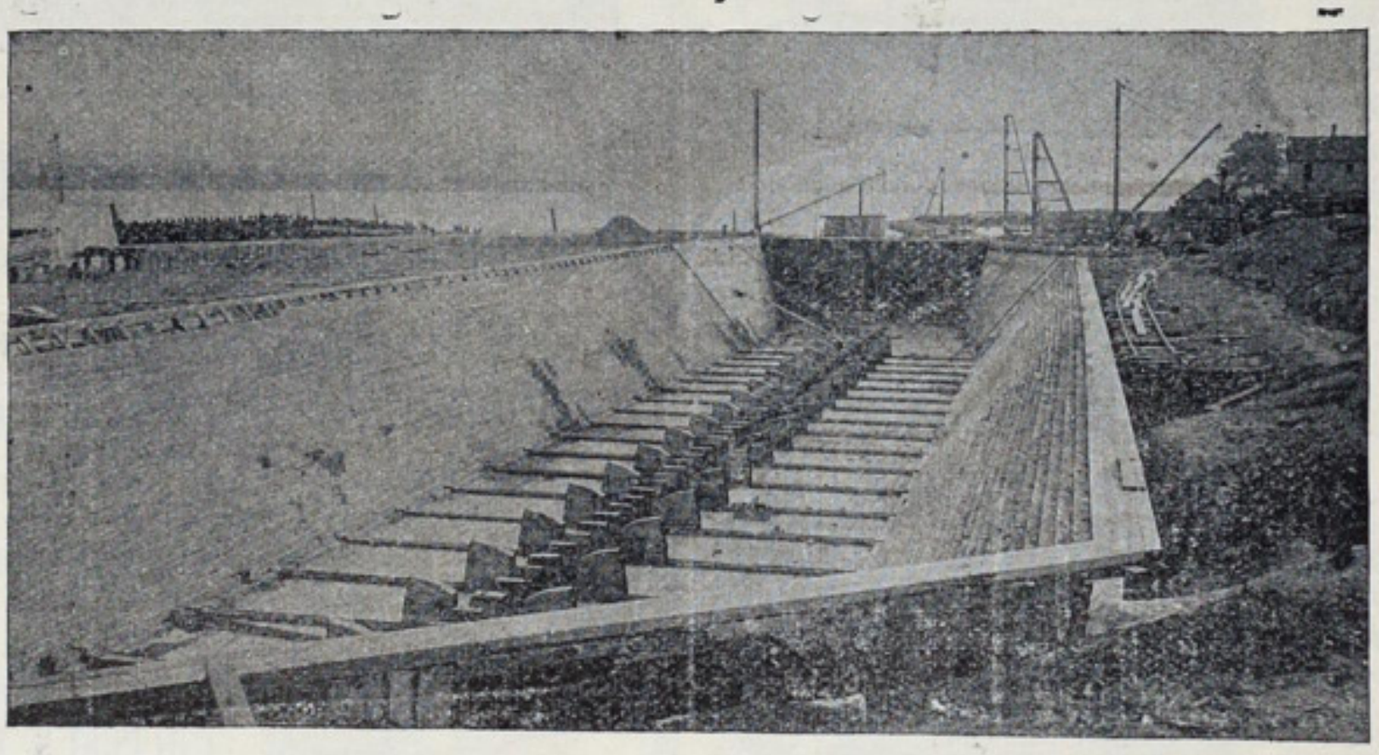

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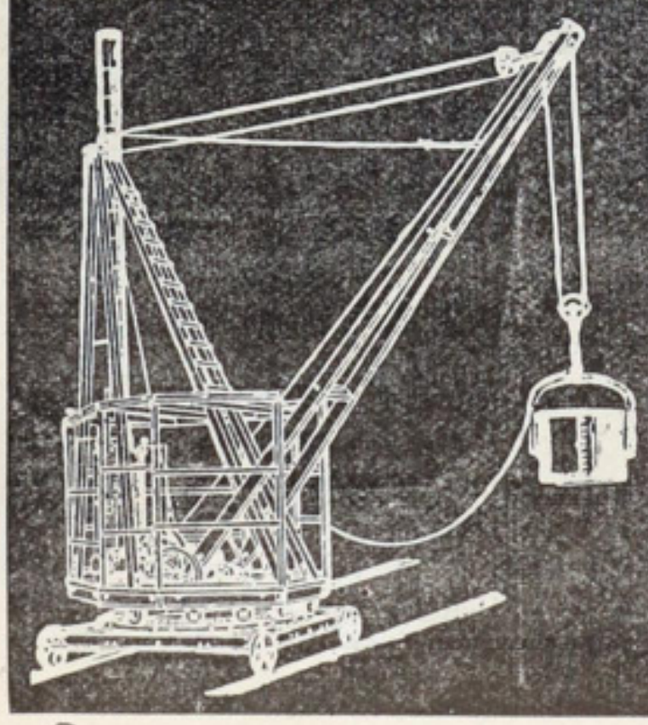

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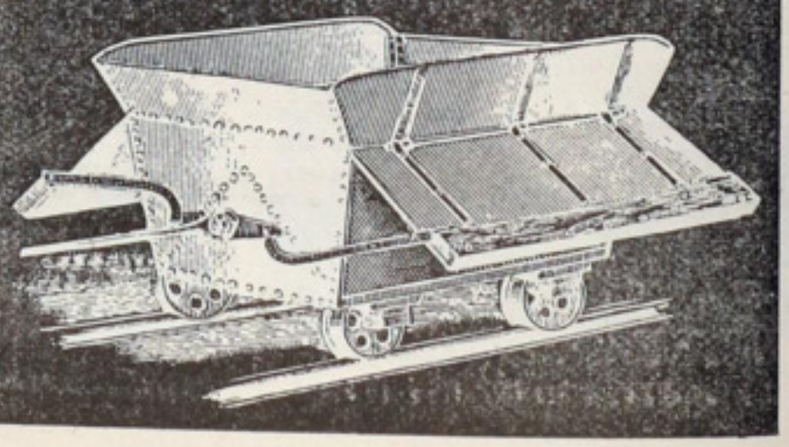

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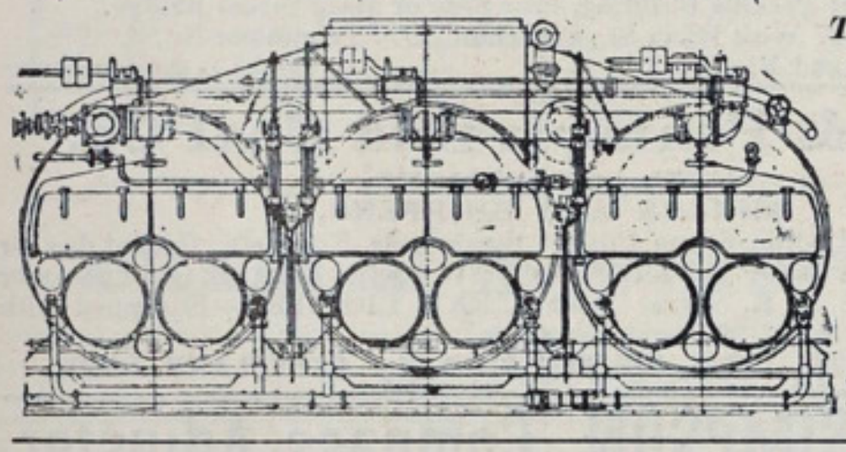

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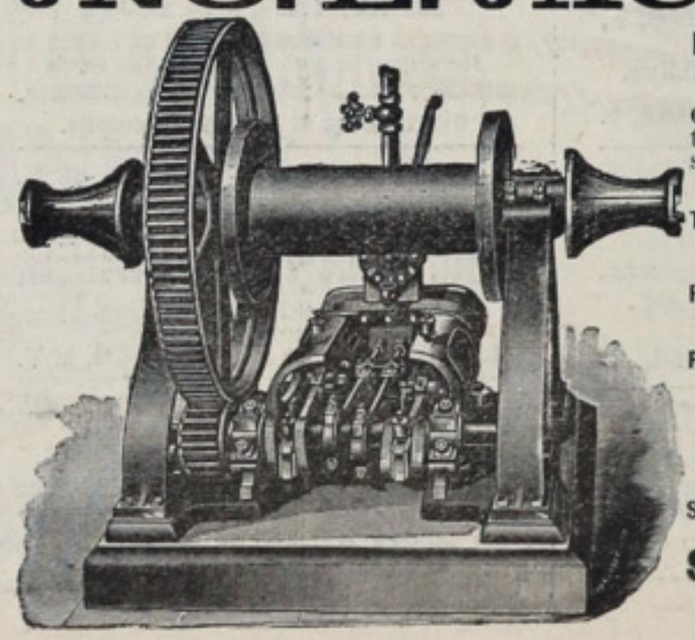

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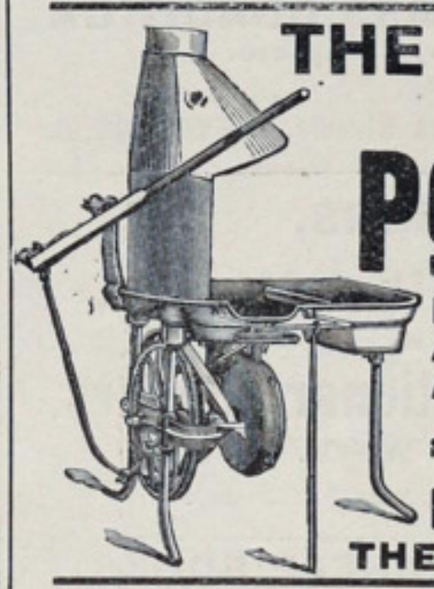

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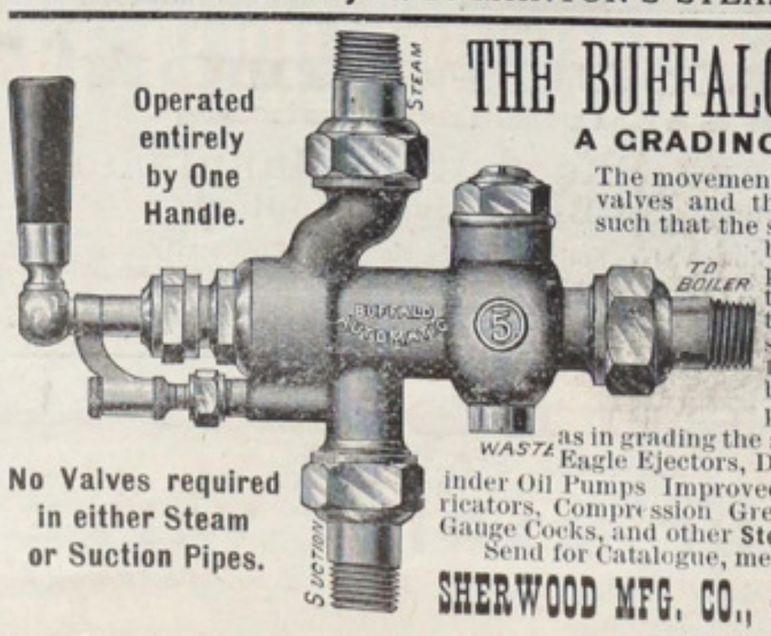


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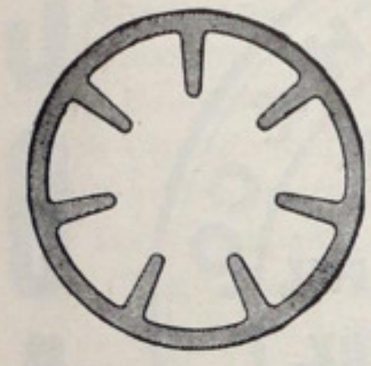

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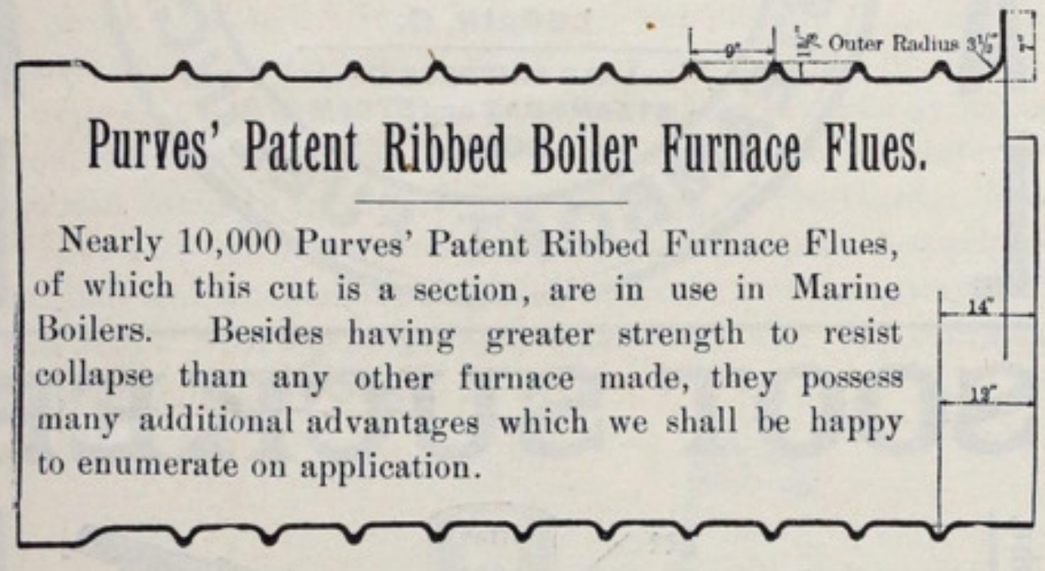


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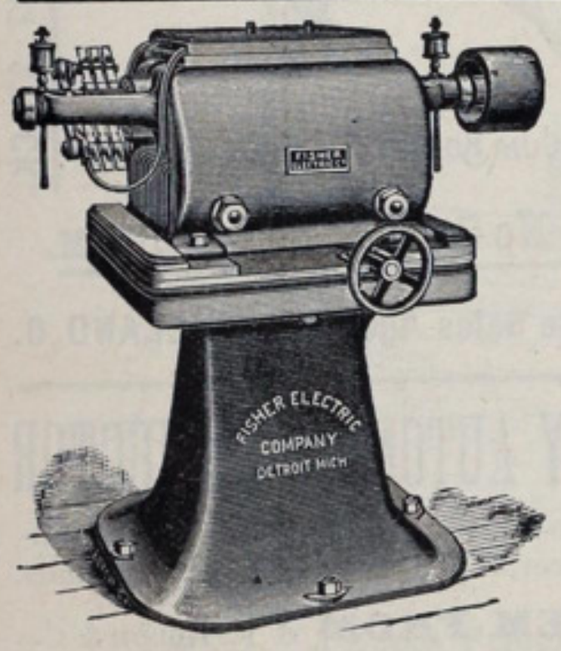


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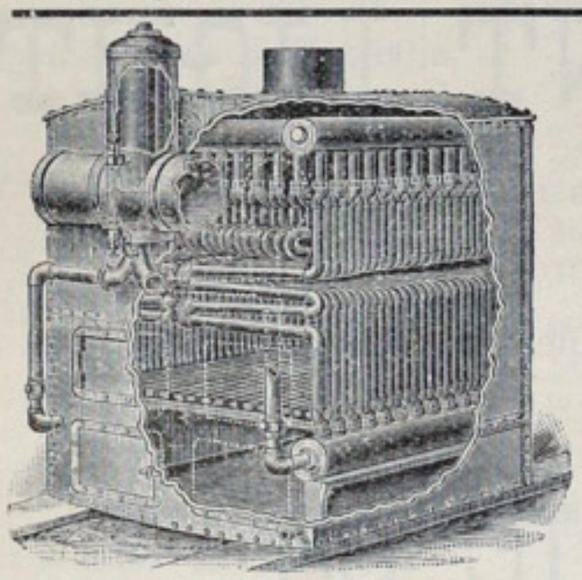

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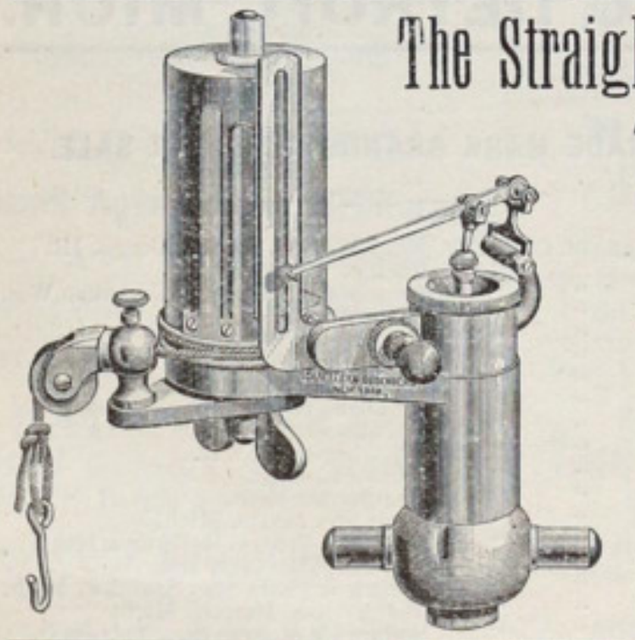

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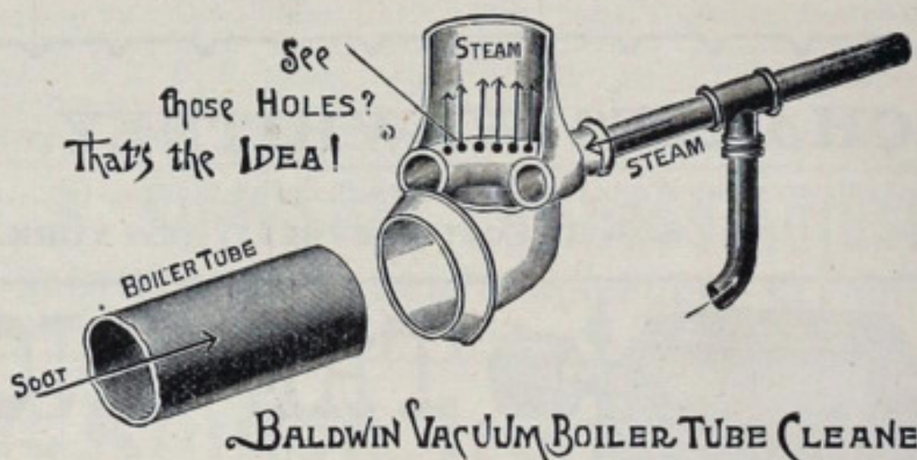


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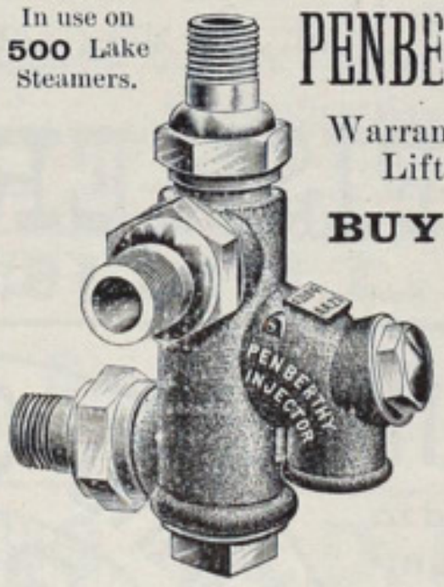


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